General

Guideline Title

WHO guideline: daily iron supplementation in infants and children.

Bibliographic Source(s)

World Health Organization (WHO). WHO guideline: daily iron supplementation in infants and children. Geneva (Switzerland): World Health Organization (WHO); 2016. 44 p. [102 references]

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Recommendations

Major Recommendations

Definitions for the strength of the recommendations (strong, conditional) and the quality of evidence (high, moderate, low, very low) are provided at the end of the "Major Recommendations" field.

Recommendations[1]

- Daily iron supplementation is recommended as a public health intervention in infants and young children aged 6 to 23 months, living in settings where anaemia is highly prevalent,[2] for preventing iron deficiency and anaemia (strong recommendation, moderate quality of evidence).
  Suggested supplementation scheme: 10 to 12.5 mg elemental iron given daily for 3 consecutive months in a year.
- Daily iron supplementation is recommended as a public health intervention in preschool-age children aged 24 to 59 months, living in settings where anaemia is highly prevalent,[2] for increasing haemoglobin concentrations and improving iron status (strong recommendation, very low quality of evidence).
  Suggested supplementation scheme: 30 mg elemental iron given daily for 3 consecutive months in a year.
- Daily iron supplementation is recommended as a public health intervention in school-age children aged 60 months and older, living in settings where anaemia is highly prevalent,[2] for preventing iron deficiency and anaemia (strong recommendation, high quality of evidence).
  Suggested supplementation scheme: 30 to 60 mg elemental iron given daily for 3 consecutive months in a year

- In malaria-endemic areas, the provision of iron supplementation in infants and children should be done in conjunction with public health measures to prevent, diagnose and treat malaria (strong recommendation, high quality of evidence).

[1]These recommendations supersede those of previous World Health Organization (WHO) guidelines on iron supplementation in children.

[2]Where the prevalence of anaemia is 40% or higher in this age group. For the latest estimates, please refer to the Vitamin and Mineral Nutrition Information System (VMNIS) hosted at WHO.

Remarks

The remarks in this section are intended to give some considerations for implementation of the recommendations, based on the discussion of the guideline development group.

- Daily oral iron supplementation is a preventive strategy for implementation at the population level. If a child is diagnosed with anaemia, national guidelines for the treatment of anaemia should be followed.
- If the prevalence of anaemia is 20% to 40%, intermittent regimens of iron supplementation can be considered.
- The selection of the most appropriate delivery platform should be context specific, with the aim of reaching the most vulnerable populations and ensuring a timely and continuous supply of supplements.
- In malaria-endemic areas, iron supplementation does not increase the risk of clinical malaria or death when regular malaria-surveillance and treatment services are provided. Oral iron interventions should not be given to children who do not have access to malaria-prevention strategies (e.g., provision of insecticide-treated bednets and vector-control programmes), prompt diagnosis of malaria illness, and treatment with effective antimalarial drug therapy.
- The risk of clinical malaria is not more likely among iron-replete children given iron supplementation in malaria-endemic areas. There is no need to screen for anaemia prior to iron supplementation in settings where anaemia is highly prevalent.
- Since malaria infection occurs in early infancy and is especially dangerous at this age, in malaria-endemic areas, iron supplements should only be given to infants who sleep under insecticide-treated bednets, and where all episodes of malaria illness can be promptly treated with effective antimalarial drug therapy according to national guidelines.
- In the presence of comprehensive surveillance and prompt diagnosis and treatment of malaria, there was no compelling evidence of increased risk of adverse events from iron supplementation. Insufficient and inequitable health-care services are associated with an increase in risks in general.

Definitions

Quality of Evidence in Grading of Recommendations Assessment, Development and Evaluation (GRADE)

High: The guideline development group is very confident that the true effect lies close to that of the estimate of the effect.

Moderate: The guideline development group is moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

Low: Confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the true effect.

Very low: The guideline development group has very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of the effect

Strength of Recommendations

- Strong: Strong recommendations communicate the message that the guideline is based on the confidence that the desirable effects of adherence to the recommendation outweigh the undesirable consequences. Strong recommendations are uncommon because the balance between the benefits and harms of implementing a recommendation is rarely certain. In particular, guideline development groups need to be cautious when considering making strong recommendations on the basis of evidence whose quality is low or very low.
- Conditional: Recommendations that are conditional or weak are made when a guideline development group is less certain about the balance between the benefits and harms or disadvantages of implementing a recommendation. Conditional recommendations generally include a description of the conditions under which the end-user should or should not implement the recommendation.

Interpretation of Strong and Conditional Recommendations for an Intervention

Audience	Strong Recommendation	Conditional Recommendation

Audience	Strong Recommendation	Conditional Recommendation
Patients	Most individuals in this situation would want the recommended course of action; only a small proportion would not. Formal decision aids are not likely to be needed to help individuals make decisions consistent with their values and preferences.	Most individuals in this situation would want the suggested course of action, but many would not.
Clinicians	Most individuals should receive the intervention. Adherence to the recommendation could be used as a quality criterion or performance indicator.	Different choices will be appropriate for individual patients, who will require assistance in arriving at a management decision consistent with his or her values and preferences. Decision aides may be useful in helping individuals make decisions consistent with their values and preferences.
Policymakers	The recommendation can be adopted as policy in most situations.	Policy-making will require substantial debate and involvement of various stakeholders.

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

- Anaemia
- Iron deficiency
- Malaria

Guideline Category

Prevention

Treatment

Clinical Specialty

Family Practice

Infectious Diseases

Nutrition

Pediatrics

Preventive Medicine

Intended Users

Advanced Practice Nurses

Dietitians

Health Care Providers

Nurses

Other

Physician Assistants

Physicians

Public Health Departments

Guideline Objective(s)

To help Member States and their partners in their efforts to make informed decisions on the appropriate nutrition actions to achieve the Sustainable Development Goals (SDGs) , the global targets set in the Comprehensive implementation plan on maternal, infant and young child nutrition and the Global strategy for women's, children's, and adolescents' health

Target Population

- Infants and young children aged 6 to 23 months, preschool-age children aged 24 to 59 months, and school-age children aged 60 months and older living in settings where anaemia is highly prevalent
- Infants and children living in malaria-endemic areas

Interventions and Practices Considered

Daily oral iron supplementation

Major Outcomes Considered

- Haemoglobin concentration
- Anaemia prevalence
- Iron deficiency
- Iron deficiency anaemia
- Cognitive performance
- Physical growth
- Safety (including gastrointestinal adverse events and infections like malaria)
- Malaria prevalence
- Mortality

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Summary of Available Evidence

Three systematic reviews that followed the procedures of the Cochrane Handbook for Systematic Reviews of Interventions were prepared on the use of iron supplementation among children aged 4 to 23 months, 2 to 5 years, and 5 to 12 years. A further review was done on iron supplementation in children in malaria-endemic areas, based on an update of previous systematic reviews. See

the "Availability of Companion Documents" field for the full text of these reviews and details of the literature searches performed.

In all the reviews, iron was administered orally (excluding parenteral administration). All reviews searched the Cochrane Central Register of Controlled Trials, Medline and EMBASE. Some also searched through the World Health Organization (WHO) regional databases (African Index Medicus, WHO Regional Office for Africa Health Sciences Library, Latin American and Caribbean Health Science Literature Database, Index Medicus for the South-East Asia Region, the Western Pacific Region, and the Eastern Mediterranean Region, the WHO International Clinical Trials Registry Platform, the Proquest Digital Thesis, the Australian Digital Theses Database, OpenSIGLE, and OpenGrey).

The reviews that limited the analysis to specific age ranges (4 to 23 months, 2 to 5 years, or 5 to 12 years), considered studies that specifically recruited children from the specified age range but also included studies if the mean or median fell within the age range, if at least 75% of the subjects fell within the designated age range, or if the majority of the study's recruitment age range overlapped with the review's designated age range. These reviews included studies that recruited otherwise healthy children, excluding studies that recruited only children with severe anaemia, those with developmental disability, or those with conditions that affect iron metabolism. Studies were included if they administered iron daily or at least 5 days a week. Studies were excluded if they provided iron through point-of-use (home) fortification or fortified food and condiments. Outcomes included haemoglobin concentration, anaemia prevalence, iron deficiency, iron deficiency anaemia, cognitive performance, physical growth and safety (including gastrointestinal adverse events and infections like malaria).

See the systematic reviews for detailed information on search strategies and inclusion and exclusion criteria.

Number of Source Documents

Children Aged 4–23 months: a Systematic Review and Meta-analysis of Randomised Controlled Trials

The search identified 9533 papers. After screening, 49 papers relating to 35 trials were eligible, of which 33 contained data that could be extracted (see Figure 1 in the systematic review [see the "Availability of Companion Documents" field]).

Children Aged 2 to 5 Years: Systematic Review and Meta-analysis

The search identified 9169 references. Nineteen studies reported in 25 references were selected for full text review. Four of these 19 studies were excluded, 2 because the age range was outside 2 to 5 years and 2 because the full text could not be obtained. Fifteen studies reported in 21 references met the criteria for inclusion (see Figure 1 in the systematic review [see the "Availability of Companion Documents" field]).

Primary School-aged Children Systematic Review

The selection of studies for inclusion is illustrated in Figure 1 systematic review (see the "Availability of Companion Documents" field). The search strategy identified 16,501 potentially eligible titles and abstracts. Following screening, 32 studies were deemed eligible. All studies except 1 were performed in low- or middle-income countries.

Children in Malaria-endemic Areas

Initially 120 studies that were conducted in hyperendemic or holoendemic malaria areas or that reported on malaria were considered in full. Of these, 83 publications were excluded for the reasons detailed in the *Characteristics of excluded studies* tables in the systematic review (see the "Availability of Companion Documents" field). Overall, 52 publications were included which represent 35 individual randomised controlled trials.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Quality of Evidence in Grading of Recommendations Assessment, Development and Evaluation (GRADE)

High: The guideline development group is very confident that the true effect lies close to that of the estimate of the effect.

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Low: Confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the true effect.

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Methods Used to Analyze the Evidence

Meta-Analysis

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Four systematic reviews were used to summarize and appraise the evidence, using the Cochrane methodology for randomized controlled trials and observational studies. Evidence summaries were prepared according to the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach to assess the overall quality of the evidence. GRADE considers the study design; the limitations of the studies in terms of their conduct and analysis; the consistency of the results across the available studies; the directness (or applicability and external validity) of the evidence with respect to the populations, interventions and settings where the proposed intervention may be used; and the precision of the summary estimate of the effect.

See the four companion systematic reviews (refer to the "Availability of Companion Documents" field) for the information on data extraction, quality assessment, and data synthesis.

Methods Used to Formulate the Recommendations

Expert Consensus (Consensus Development Conference)

Expert Consensus (Delphi)

Description of Methods Used to Formulate the Recommendations

Guideline Development Process

This guideline was developed in accordance with the World Health Organization (WHO) evidence-informed guideline-development procedures, as outlined in the *WHO handbook for guideline development* (see the "Availability of Companion Documents" field).

Advisory Groups

The WHO Steering Committee for Nutrition Guidelines Development, led by the Department of Nutrition for Health and Development, was established in 2009 with representatives from all WHO departments with an interest in the provision of scientific nutrition advice. The WHO Steering Committee for Nutrition Guidelines Development meets twice yearly and both guided and provided overall supervision of the guideline development process. Two additional groups were formed: a guideline development group and an external review group.

Two guideline development groups participated in the development of this guideline. Their role was to advise WHO on the choice of important outcomes for decision-making and on interpretation of the evidence. The WHO guideline development group – nutrition actions includes experts from various WHO expert advisory panels and those identified through open calls for specialists, taking into consideration a balanced gender mix, multiple disciplinary areas of expertise, and representation from all WHO regions. Efforts were made to include content experts, methodologists, representatives of potential stakeholders (such as managers and other health professionals involved in the health-care process), and technical staff from WHO and ministries of health from Member States. Representatives of commercial organizations may not be members of a WHO guideline group.

Scope of the Guideline, Evidence Appraisal and Decision-making

An initial set of questions (and the components of the questions) to be addressed in the guideline formed the critical starting point for formulating

the recommendation. The questions were drafted by technical staff at the Evidence and Programme Guidance Unit, Department of Nutrition for Health and Development, based on the policy and programme guidance needs of Member States and their partners. The population, intervention, control, outcomes (PICO) format was used (see Annex 11 of the original guideline document). The questions were discussed and reviewed by the WHO Steering Committee for Nutrition Guidelines Development and the guideline development group – nutrition actions, and were modified as needed.

A meeting of the guideline development group – nutrition actions was held on 14–16 March 2010, in Geneva, Switzerland, to finalize the scope of the questions and rank the outcomes and populations of interest for the recommendations on iron supplementation. The guideline development group discussed the relevance of the questions and modified them as needed. The group scored the relative importance of each outcome from 1 to 9 (where 7–9 indicated that the outcome was critical for a decision, 4–6 indicated that it was important and 1–3 indicated that it was not important). The final key questions on this intervention, along with the outcomes that were identified as critical for decision-making, are listed in PICO format in Annex 11 of the original guideline document.

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Both the systematic review and the GRADE evidence profiles for each of the critical outcomes were used for drafting this guideline. The draft recommendation was discussed by the WHO Steering Committee for Nutrition Guidelines Development and in consultations with the WHO guideline development group – nutrition actions, held on 14–18 March 2011 and 23–26 June 2014 in Geneva, Switzerland.

The procedures for decision-making are established at the beginning of the meetings, including a minimal set of rules for agreement and decision-making documentation. At least two thirds of the guideline development group should be present for an initial discussion of the evidence and proposed recommendation and remarks. The members of the guideline development group secretly noted the direction and strength of the recommendation using a form designed for this purpose, which also included a section for documenting their views on (i) the desirable and undesirable effects of the intervention; (ii) the quality of the available evidence; (iii) values and preferences related to the intervention in different settings; and (iv) the cost of options available to health-care workers in different settings (see Annex 2 of the original guideline document). Each member used one form, if not advised otherwise after managing any potential conflict of interests. Abstentions were not allowed. The process was improved with the availability of a predefined link to an online form prepared using survey software. Subsequent deliberations among the members of the guideline development group were of private character. The WHO Secretariat collected the forms and disclosed a summary of the results to the guideline development group. If there was no unanimous consensus (primary decision rule), more time was given for deliberations and a second round of online voting took place. If no unanimous agreement was reached, a two-thirds vote of the guideline development group was required for approval of the proposed recommendation (secondary decision rule). Divergent opinions could be recorded in the guideline. The results from voting forms are kept on file by WHO for up to 5 years. Although there was no unanimous consensus, more than 80% of the guideline development group members decided that each recommendation was strong.

WHO staff present at the meeting, as well as other external technical experts involved in the collection and grading of the evidence, were not allowed to participate in the decision-making process. Two co-chairs with expertise in managing group processes and interpreting evidence were nominated at the opening of the consultation, and the guideline development group approved the nomination. Members of the WHO Secretariat were available at all times, to help guide the overall meeting process, but did not vote and did not have veto power.

Rating Scheme for the Strength of the Recommendations

Strength of Recommendations

- Strong: Strong recommendations communicate the message that the guideline is based on the confidence that the desirable effects of adherence to the recommendation outweigh the undesirable consequences. Strong recommendations are uncommon because the balance between the benefits and harms of implementing a recommendation is rarely certain. In particular, guideline development groups need to be cautious when considering making strong recommendations on the basis of evidence whose quality is low or very low.
- Conditional: Recommendations that are conditional or weak are made when a guideline development group is less certain about the balance between the benefits and harms or disadvantages of implementing a recommendation. Conditional recommendations generally include a description of the conditions under which the end-user should or should not implement the recommendation.

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Clinicians	Most individuals should receive the intervention. Adherence to the recommendation could be used as a quality criterion or performance indicator.	Different choices will be appropriate for individual patients, who will require assistance in arriving at a management decision consistent with his or her values and preferences. Decision aides may be useful in helping individuals make decisions consistent with their values and preferences.
Policymakers	The recommendation can be adopted as policy in most situations.	Policy-making will require substantial debate and involvement of various stakeholders.

Cost Analysis

Cost information was not presented to the guideline development group.

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

The final draft guideline was peer-reviewed by three content experts, who provided technical feedback. These peer-reviewers (see Annex 8 of the original guideline document) were identified through various expert panels within and outside World Health Organization (WHO).

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

The available evidence comprised four systematic reviews that included individually randomized and cluster-randomized controlled trials.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Daily Iron Supplementation in Children Aged 6–23 Months

Benefits include improved haemoglobin and lower risk of anaemia, which have functional consequences.

Daily Iron Supplementation in Children Aged 24–59 Months

The intervention improves haemoglobin and ferritin concentrations and prevents anaemia.

Daily Iron Supplementation in Children Aged 60 Months and Older

The intervention improves anaemia, iron deficiency anaemia and iron deficiency.

Potential Harms

Daily Iron Supplementation in Children Aged 6–23 Months

Potential harms include diarrhoea, but evidence is low or very low or not thoroughly evaluated for potential harms. Not enough data are available on long-term harm, for instance on overdose, specifically for children who are iron replete.

Daily Iron Supplementation in Children Aged 24–59 Months

There is no clear evidence regarding harms at proposed doses for diarrhoea and other gastrointestinal effects, liver damage, insulin resistance or iron overload.

Daily Iron Supplementation in Children Aged 60 Months and Older

No major harms were identified in this age group, though there is not enough evidence on gastrointestinal effects, potential toxic endpoints and the impact of iron overload.

Daily Iron Supplementation in Malaria–Endemic Areas

In malaria-endemic areas, where there is limited malaria prevention and clinical care, universal iron supplementation may be associated with an increased risk of malaria. Control of infectious diseases and malaria with insecticide-treated bednets and vector control, and treatment of malaria episodes with effective antimalarial therapy, are critical components of health care and should be instituted, together with promotion of exclusive breastfeeding up to the age of 6 months, followed by high-quality complementary feeding.

Qualifying Statements

Qualifying Statements

- The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization (WHO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.
- The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the WHO in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.
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Implementation of the Guideline

Description of Implementation Strategy

Dissemination

The current guideline will be disseminated through electronic media, such as slide presentations and the World Wide Web, through either the World Health Organization (WHO) Nutrition mailing lists , social media, the WHO Nutrition Web site or the WHO e-Library of Evidence for Nutrition Actions (eLENA) . eLENA compiles and

displays WHO guidelines related to nutrition, along with complementary documents such as systematic reviews and other evidence that informed the guidelines; biological and behavioural rationales; and additional resources produced by Member States and global partners. In addition, the guideline will be disseminated through a broad network of international partners, including WHO country and regional offices, ministries of health, WHO collaborating centres, universities, other United Nations agencies and nongovernmental organizations. Derivative products such as summaries and collation of recommendations related to iron supplementation will be developed for a more tailored product that is useful for end-users.

Particular attention will be given to improving access to these guidelines for stakeholders that face more, or specific, barriers in access to information, or to those who play a crucial role in the implementation of the guideline recommendations, for example, policy-makers and decision-makers at subnational level that disseminate the contents of the guideline, and health workers and education staff that contribute to the delivery of the intervention. Disseminated information may emphasize the benefits of iron supplementation for infants and children in populations or regions presenting an important risk of anaemia and iron deficiency. In addition, these guidelines and the information contained therein should be accessible to the nongovernmental organizations working in coordination with national authorities on the implementation of nutrition interventions, especially those related to the prevention and control of anaemia in infants and children.

Implementation

As this is a global guideline, it should be adapted to the context of each Member State. Prior to implementation, a public health programme that includes the provision of iron supplements to children should have well-defined objectives that take into account available resources, existing policies, suitable delivery platforms and suppliers, communication channels, and potential stakeholders. Ideally, iron supplementation should be implemented as part of an integrated programme on child health, which includes addressing micronutrient deficiencies.

Considering the actual experience of children and their caregivers with the intervention is also a relevant implementation consideration: ongoing assessment of the accessibility and acceptability of the intervention can inform programme design and development, in order to increase therapeutic adherence and better assess the impact of the programme. This is particularly relevant in settings where the prevailing social norms and determinants may set unequal conditions and opportunities for different groups. For instance, in some settings, gender norms may create unequal opportunities for girls and boys at any age, within and outside of school; in other settings, social perceptions around ethnicity and race intervene in how certain population groups access and use an intervention.

Furthermore, intersectoral action is fundamental in those settings where the intervention is delivered in coordination with the education sector. The education sector is an important partner in the implementation of the recommendation referring to school-age children. Appropriate coordination mechanisms and proper training of health workers and education staff is necessary for delivery of the intervention and also for collection of data needed for programme monitoring and surveillance, including information on factors related to health inequities.

Specific efforts to increase the acceptability of the intervention to children and their caregivers are also important. Greater acceptability and adoption are better achieved if they are accompanied by simple and easy-to-access information that can be understood by different population groups, in a way that is culturally appropriate and understandable.

Accessing hard-to-reach population groups is extremely important during implementation stages, as it contributes to preventing or tackling health inequities and to furthering the realization of children's rights to health. Appropriate surveillance and monitoring systems can thus provide information on the impact of the disseminated guidelines and their implementation (including information on the adequacy of funding and the effectiveness of the supply chain and distribution channels).

Monitoring and Evaluation of Guideline Implementation

A plan for monitoring and evaluation with appropriate indicators, including equity-oriented indicators, is encouraged at all stages. The impact of this guideline can be evaluated within countries (i.e., monitoring and evaluation of the programmes implemented at national or regional scale) and across countries (i.e., adoption and adaptation of the guideline globally). The WHO Department of Nutrition for Health and Development, Evidence and Programme Guidance Unit, jointly with the United States Centers for Disease Control and Prevention (CDC) International Micronutrient Malnutrition Prevention and Control (IMMPaCt) programme, and with input from international partners, has developed a generic logic model for micronutrient interventions in public health, to depict the plausible relationships between inputs and expected Sustainable Development Goals (SDGs), by applying the micronutrient programme evaluation theory. Member States can adjust the model and use it in combination with appropriate indicators, for designing, implementing, monitoring and evaluating the successful escalation of nutrition actions in public health programmes. Additionally, the WHO/CDC eCatalogue of Indicators for Micronutrient Programmes , which utilizes the logic model, has been developed as a user-friendly and non-comprehensive Web resource for those actively engaged in providing technical assistance in monitoring, evaluation and surveillance of public health programmes implementing micronutrient interventions. Indicators for iron supplementation are currently being developed and, once complete, will provide a list of potential indicators with standard definitions that can be

selected, downloaded and adapted to a local programme context. The eCatalogue will serve as a repository of indicators to monitor and evaluate micronutrient interventions. While it does not provide guidance for designing or implementing a monitoring or evaluation system in public health, some key indicators may include useful references for that purpose.

Since 1991, WHO has hosted the Vitamin and Mineral Nutrition Information System (VMNIS) micronutrients database. Part of WHO's mandate is to assess the micronutrient status of populations, monitor and evaluate the impact of strategies for the prevention and control of micronutrient malnutrition, and track related trends over time. The Evidence and Programme Guidance Unit of the Department of Nutrition for Health and Development manages the VMNIS micronutrient database, through a network of regional and country offices, and in close collaboration with national health authorities.

For evaluation at the global level, the WHO Department of Nutrition for Health and Development has developed a centralized platform for sharing information on nutrition actions in public health practice implemented around the world. By sharing programmatic details, specific country adaptations and lessons learnt, this platform will provide examples of how guidelines are being translated into actions. The Global Database on the Implementation of Nutrition Action (GINA) provides valuable information on the implementation of numerous nutrition policies and interventions. The use of GINA has grown steadily since its launch in November 2012.

An efficient system for the routine collection of relevant data, including relevant determinants of health, therapeutic adherence, and measures of programme performance, is critical to ensure supplementation programmes are effective and sustained, and drivers to the achievement of the right to health for all population groups. Monitoring differences across groups in terms of accessibility, availability, acceptability and quality of the interventions contributes to the design of better public health programmes. The creation of indicators for monitoring can be informed by the approaches of social determinants of health, so inequities can be identified and tackled. It is particularly important to design sound implementation strategies to serve as the base for scaling up efforts. Appropriate monitoring requires suitable data, so efforts to collect and organize information on the implementation are also fundamental.

See the original guideline document for more information on guideline implementation and dissemination, including regulatory and ethical considerations.

Implementation Tools

Quick Reference Guides/Physician Guides

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Staying Healthy

IOM Domain

Effectiveness

Safety

Identifying Information and Availability

Bibliographic Source(s)

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Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2016

Guideline Developer(s)

World Health Organization - International Agency

Source(s) of Funding

The World Health Organization (WHO) thanks the Bill & Melinda Gates Foundation for providing financial support for this work. The Micronutrient Initiative and the International Micronutrient Malnutrition Prevention and Control Program of the United States Centers for Disease Control and Prevention (CDC) provided financial support to the Evidence and Programme Guidance Unit, Department of Nutrition for Health and Development, for the commissioning of systematic reviews of nutrition interventions. Donors do not fund specific guidelines and do not participate in any decision related to the guideline development process, including the composition of research questions, membership of the guideline groups, conduct and interpretation of systematic reviews, or formulation of recommendations.

Guideline Committee

World Health Organization (WHO) Steering Committee for Nutrition Guidelines Development

WHO Guideline Development Group

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Financial Disclosures/Conflicts of Interest

According to the rules in the World Health Organization (WHO) Basic documents and the processes recommended in the WHO Handbook for Guideline Development, all experts participating in WHO meetings must declare any interest relevant to the meeting, prior to their participation. The responsible technical officer and the relevant departments reviewed the declarations-of-interest statements for all guideline development group members before finalization of the group composition and invitation to attend a guideline development group meeting. All members of the guideline development group, and participants of the guideline development meetings, submitted a declaration of interests form, along with their curriculum vitae, before each meeting. Participants of the guideline development group meetings participated in their individual capacity and not as institutional representatives. In addition, they verbally declared potential conflicts of interest at the

beginning of each meeting. The procedures for management of competing interests strictly followed the WHO guidelines for declaration of interests. The management of the perceived or real conflicts of interest declared by the members of the guideline group is summarized in the original guideline document.

External experts also declared their interest but did not participate in the deliberations or decision-making process.

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Available from the World Health Organization (WHO) Web site .

Availability of Companion Documents

The following are available:

- Pasricha SR, Hayes E, Kalumba K, Biggs BA. Effect of daily iron supplementation on health in children aged 4-23 months: a systematic review and meta-analysis of randomised controlled trials. Lancet Glob Health. 2013;1(2):e77-86. Available from the World Health Organization (WHO) Web site .
- Thompson J, Biggs BA, Pasricha SR. Effects of daily iron supplementation in 2- to 5-year-old children: systematic review and meta-analysis. Pediatrics. 2013;131(4):739-53. Available from the WHO Web site .
- Low M, Farrell A, Biggs B, Pasricha S. Effects of daily iron supplementation in primary-school-aged children: systematic review and meta-analysis of randomized controlled trials. CMAJ. 2013;185(17):E791-802. Available from the WHO Web site .
- Neuberger A, Okebe J, Yahav D, Paul M. Oral iron supplements for children in malaria-endemic areas. Cochrane Database Syst Rev. 2016;(2):CD006589. Available from the WHO Web site .
- WHO guideline: daily iron supplementation in infants and children. Executive summary. Geneva (Switzerland): World Health Organization (WHO); 2016. 3 p. Available from the WHO Web site .
- WHO handbook for guideline development. 2nd edition. Geneva (Switzerland): World Health Organization (WHO); 2014. 179 p. Available from the WHO Web site .

Patient Resources

None available

NGC Status

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